



# An assessment of linguistic development in a Kaqchikel immersion school

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Guatemala C. A., Indios de Ixim con Suyocali





# Education in Guatemala

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- Maya population in Chimaltenango 80%
- Maya population living in poverty 90%
- Illiteracy rate for the Maya population: 47%
- Avg. number of years in school 3
- Maya Children attending High school 18%
- Maya attending University: 0.5%
- Quality of education ranking (out of 137) 98<sup>th</sup>  
(Guatemala census 2002, UNESCO 2007)





# Nimaläj Kaqchikel Amaq' school

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- ❖ Quality education
- ❖ Language, culture
- ❖ Children in poverty
- ❖ Ages 3 to grade 4
- ❖ We increment one grade every year





# Weaving

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# Organic agriculture





# Maya hieroglyphic writing

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# The Maya ball game (Chaj Chay)

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# Theater in Kaqchikel

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Literacy rate: 100% by age 6 in Spanish





# Kaqchikel language program





# Kaqchikel language program

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- ❖ Math, art, Kaqchikel, Physical education
- ❖ 11 hours a week about  $\frac{1}{2}$  of instruction time.
- ❖ 4 teachers
- ❖ No government support





# Education materials

- ❖ All created by our teachers.
- ❖ Games
- ❖ Theatre
- ❖ Songs
- ❖ Puppet presentations





# Assessment

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- ❖ **Goals:** Provide an objective measure of progress in the program tailored to the language and the students; to help improve the program for the future
- ❖ Two separate assessments: **production, comprehension**
- ❖ Based loosely on other assessments (e.g. Peter et al. 2008)
- ❖ Focused on grammatical features that are both broadly applied (frequent) and which are more unique to the language
- ❖ Only tested concepts to which they had been formally exposed, and attempted to only use familiar vocabulary
- ❖ Administered by teachers



# Assessment 1: Elicited production

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- ❖ Picture elicitation task
- ❖ 36 children, 5-10
- ❖ 45 items:
  - ❖ 15 vocabulary only
  - ❖ 20 intransitive root verbs
  - ❖ 10 positional root verbs
  - ❖ Each response had separate scores for vocabulary, phonology, and morphology
- ❖ Scored by RH and a native speaker with 98% inter-rater reliability





# Morphology

- ❖ Intransitive verbs: singular vs. plural, V-initial vs. C-initial
- ❖ 5 items for 4 conditions = 20 items
- ❖ TAM-Absolutive agreement-Verb root

(1) n-(i)-ropin  
PRS-3SG.ABS-jump  
'he/she is jumping'

(2) j-e-ropin  
PRS-3PL.ABS-jump  
'they are jumping'





# Morphology

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- ❖ Positional roots vs. intransitives derived from positional roots: stative vs. incompletive aspect
- ❖ Question: do they know the difference between positional roots and intransitive roots? Have they mastered the dedicated morphology?

(3) Ø    ɕ'uj-ʊl

3SG sit-POS

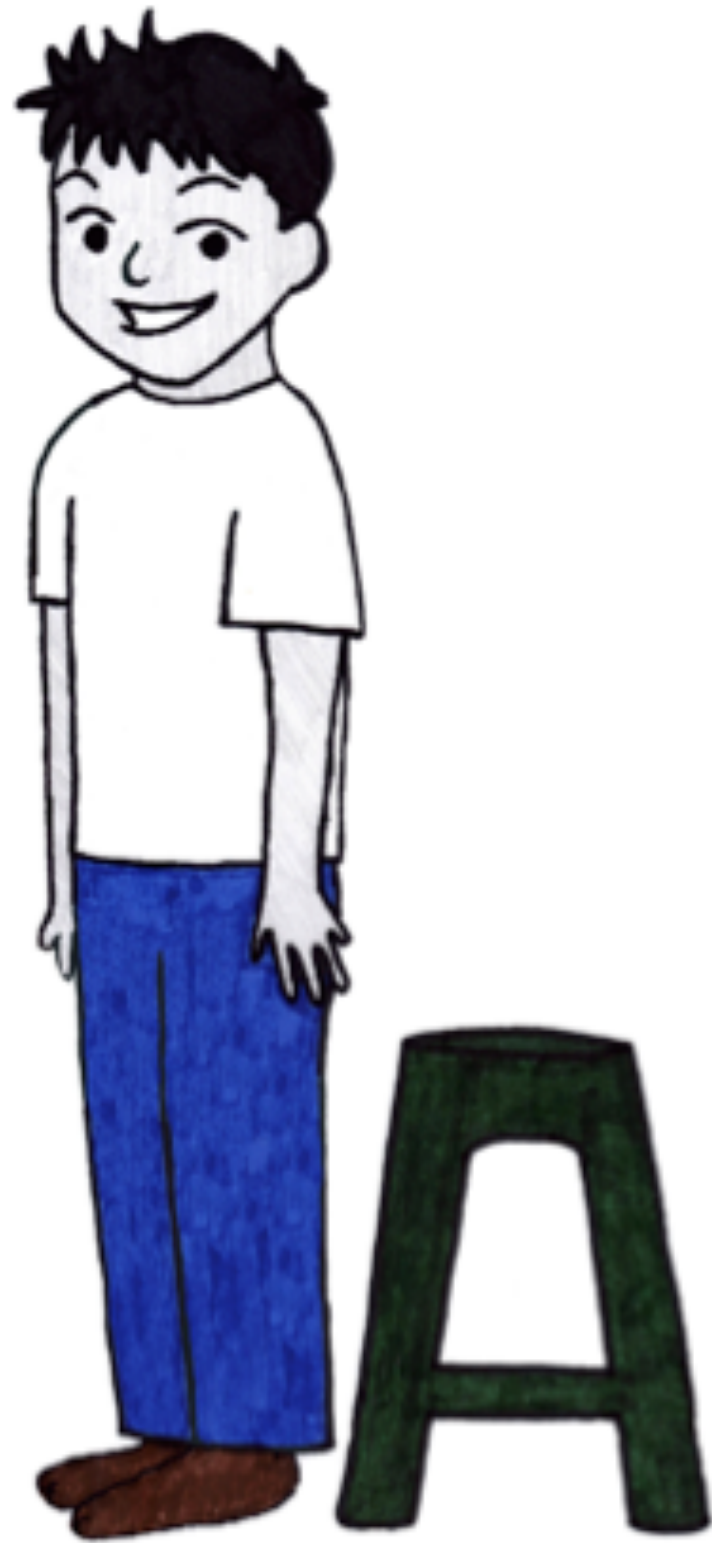
‘he/she is seated’

(4) n-(i)-ɕ'uj-eʔ

PRS-3SG.ABS-sit-IV

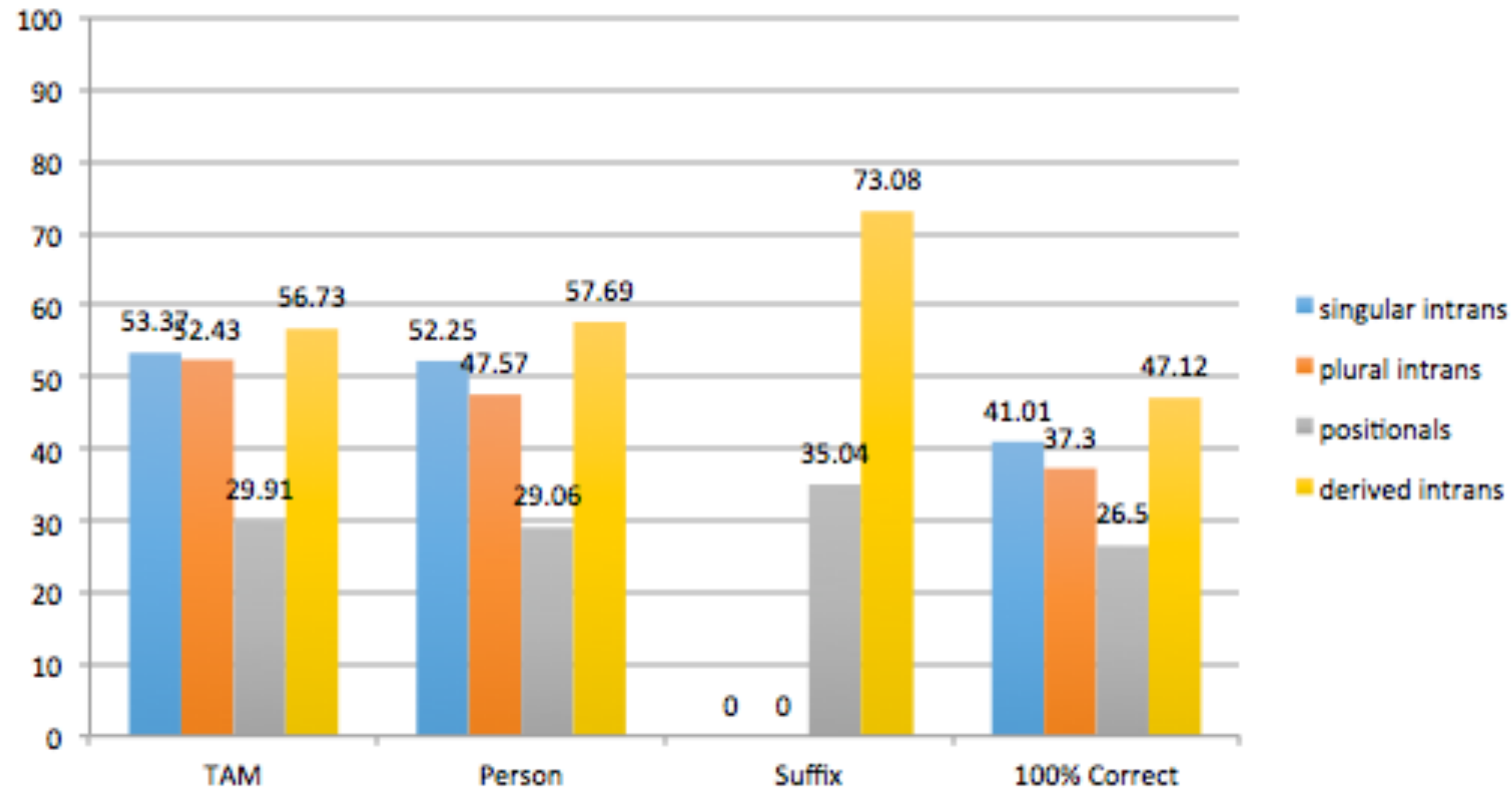
‘he/she is [in the process of] sitting’





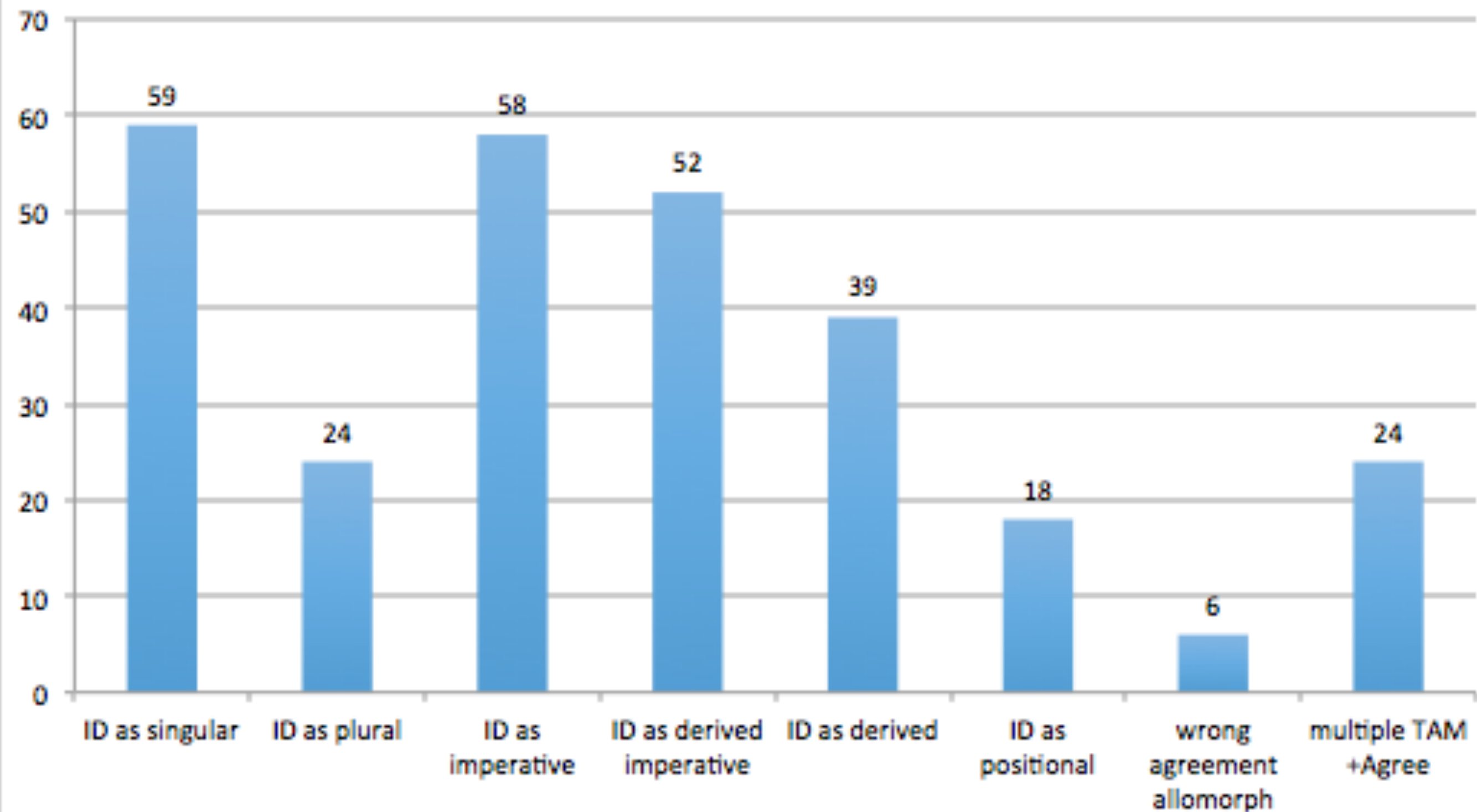


# Results: Morphology





# Morphology error analysis





# Error examples

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- (5) k-a-ropin  
IMP-2G.ABS-jump  
'(you) jump!'
- (6) k-a-ç'uj-e?  
IMP-2SG.ABS-sit-IV  
'(you) sit!'
- (7) \*n-i-k-a-ç'uj-e?  
PRS-3SG.ABS-IMP-2SG.ABS-sit-IV  
'he is [in the process of] sitting'



# Assessment 2: Picture selection

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- ❖ Focused on assessing mastery of singular / plural distinctions for intransitive verbs and the difference between positionals and intransitives derived from positionals
- ❖ 1 month after the production test
- ❖ 53 children, 3-10
- ❖ Picture selection task (2 pictures)
- ❖ 30 items
  - ❖ 20 singular / plural
  - ❖ 10 positional / derived



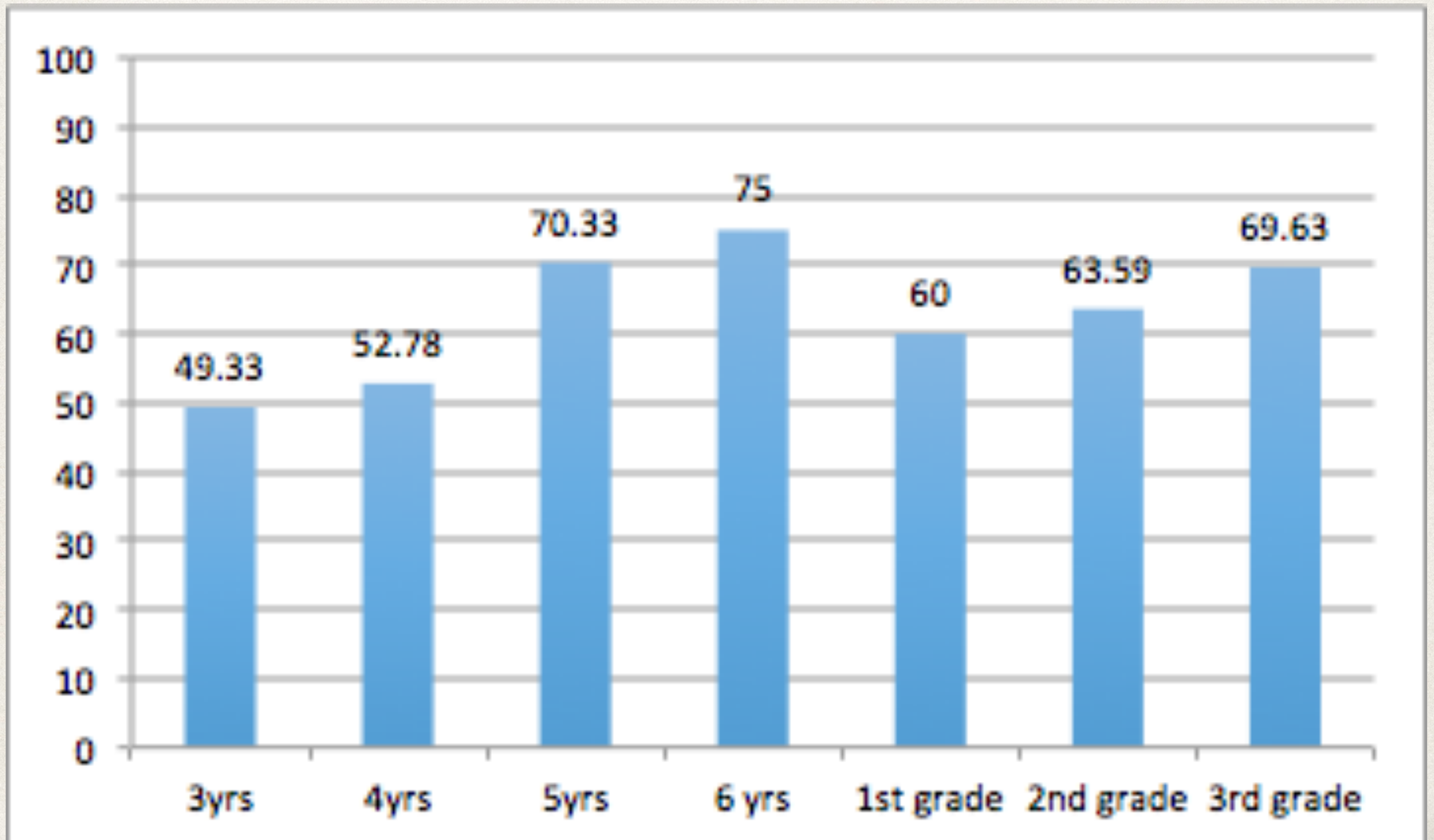
Tachapa' ri achib'äl akuchi' ye'oq'  
'Touch the picture where they are crying'





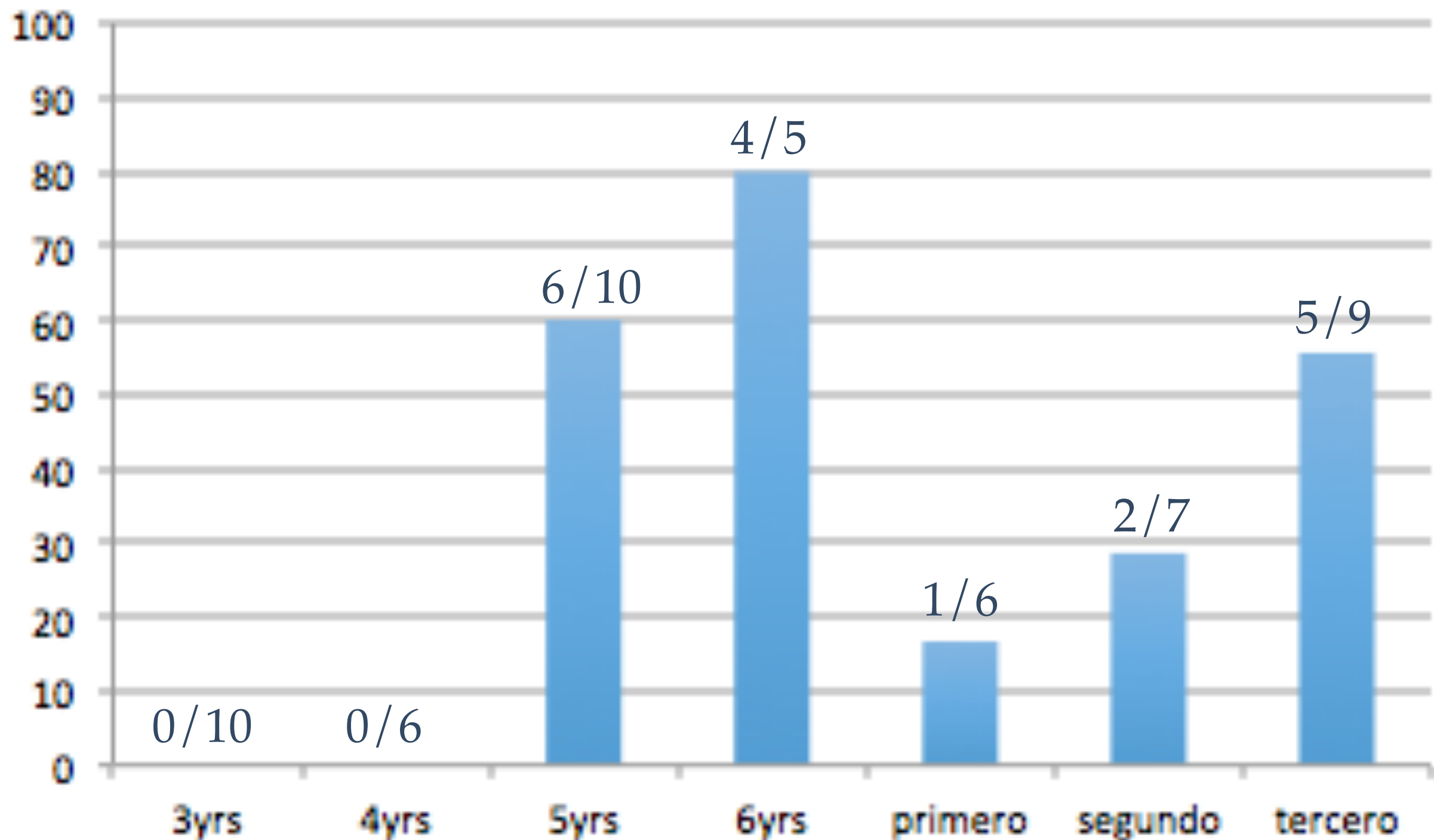
# Average comprehension score by age group

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# Number of students performing above chance by age group





# Comprehension results cont.

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- 18 (34%) had statistically significant overall comprehension test results
- 40 (75%) performed above chance in at least one of the four categories
  - 19 (36%) correctly selected singulars above the rate of chance
  - 26 (49%) correctly selected plurals above the rate of chance
  - 22 (42%) correctly selected positionals above the rate of chance
  - 5 (9%) correctly selected derived intransitives above the rate of chance
- No difference in comprehension of C- vs. V-initial roots
- \*\*Have students mastered plurality or positionals?**
  - 17 (32%) have mastered plurality
  - 1 2nd grader mastered the distinction between positionals and derived intransitives



# Summary

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- ❖ At least 30-40% of students have command of intransitive verb morphology
- ❖ It is likely that imperatives are prominent in the input compared with 3rd person forms
- ❖ Do NOT appear to confuse prevocalic vs. preconsonantal allomorphs, or positional with intransitive morphology
- ❖ Performance on positionals suggests that although students may hear the derived intransitive more (and are therefore better able to produce it) they largely haven't grasped that when used outside an imperative it has a specific meaning separate from the positional



# Applications

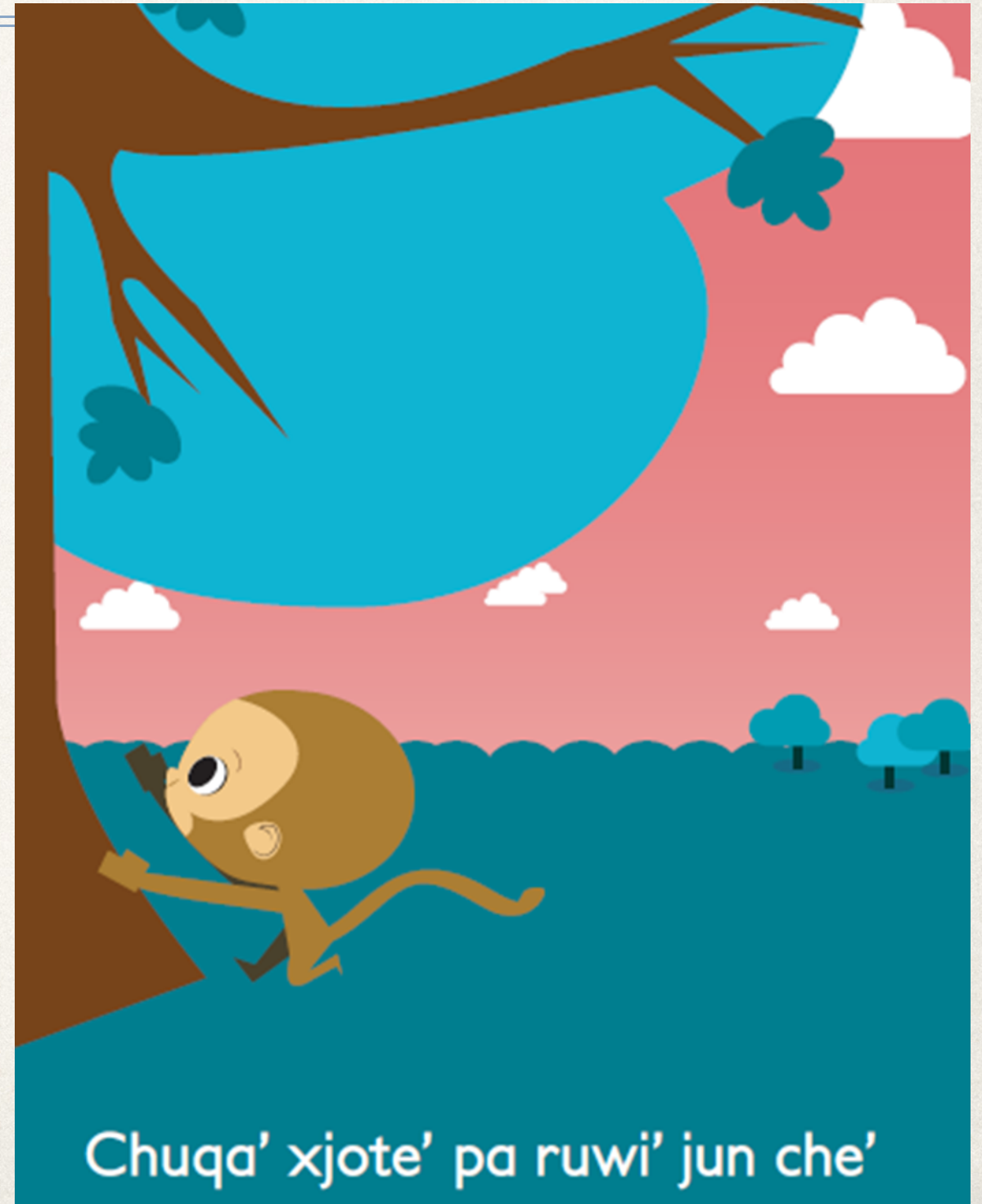
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- ❖ We recognized areas that need improvement.  
Example: more production.
- ❖ Change in teaching methodology as a result of the assessment.



# Applications and future projects

- ❖ Creation of more materials: Books, games, etc.
- ❖ Creation of materials for new grades
- ❖ Expanding Kaqchikel instruction to full immersion.
- ❖ Continued assessment





# Thank you!

## Matyöx chiwe!

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# Additional information:

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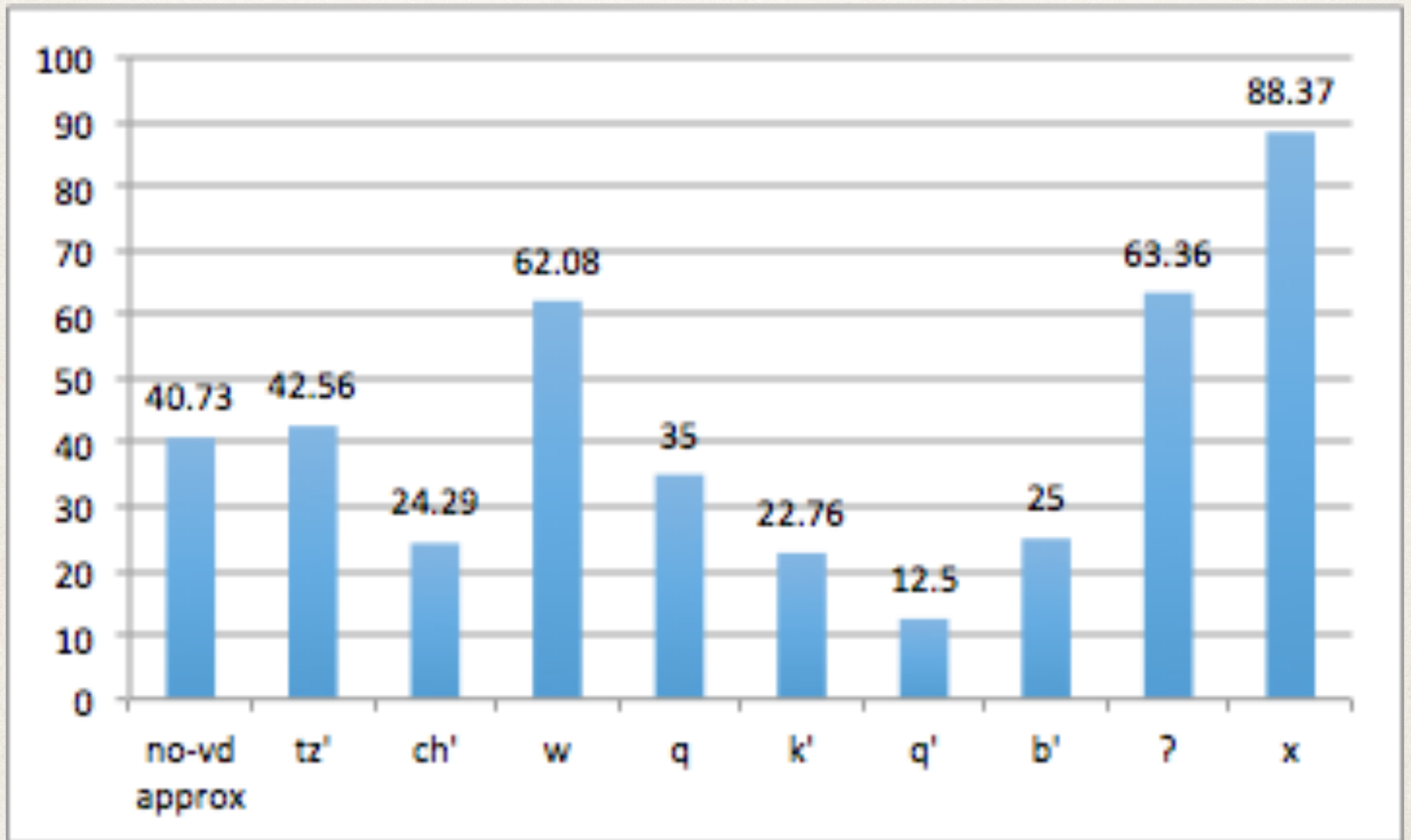


# Phonology

	bilabial	alveolar	postalveolar	palatal	velar	uvular	glottal
stops	p	t			k	q	ʔ
glottalized		<b>ᵀ</b> t'			<b>k'</b>	<b>q'/q̣</b>	
nasals	m	n					
fricatives		s	ʃ		<b>x/χ</b>		
affricates		ç	tʃ				
glottalized		<b>ç'</b>	<b>tʃ'</b>				
approximants	<b>(w)</b>	<b>r</b>		j	<b>(w)</b>		
lateral approx.		l					



# % Target-like phoneme production





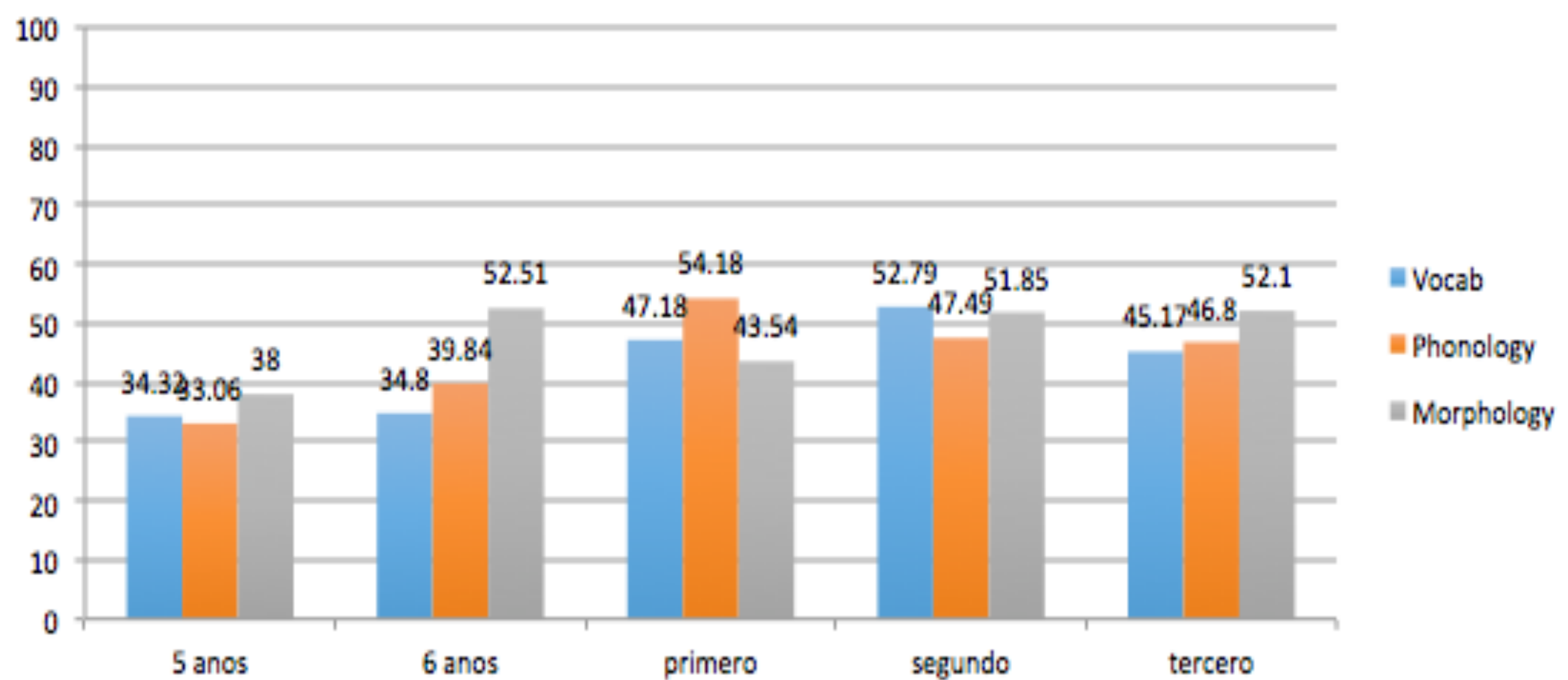
# Vocabulary Items

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[kər]	‘fish’
[qʊpɪbəl]	‘scissors; knife’
[k’oj]	‘spider monkey’
[qən]	‘yellow’
[ç’iɓaɓəl]	‘pen/pencil’
[č’ič’]	‘car/metal’
[ʃar]	‘blue’
[cholqɪχ]	‘calendar’
[woʔo]	‘five’
[kaxiʔ]	‘four’
[sik’iwux]	‘book’
[wəj]	‘tortilla’
[səq]	‘white’
[ɓaç’]	‘howler monkey’
[utiw]	‘wolf’



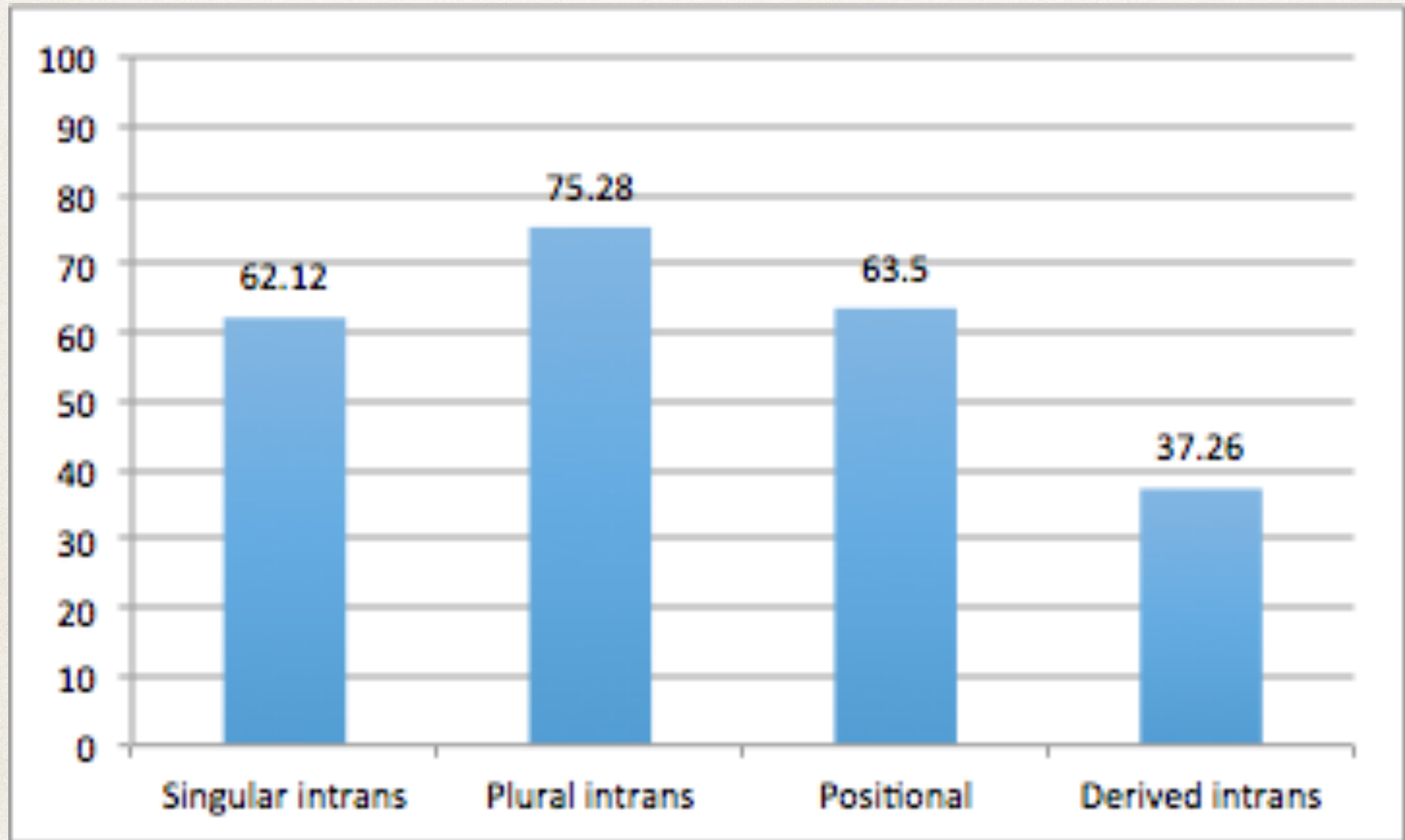
# Mean scores by age group





# Comprehension results by type

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# Comprehension of Consonant-initial vs. Vowel-initial root items

